EFFECT OF PUBLIC DEBT ON POVERTY LEVELS AMONG THE EAST AFRICAN COMMUNITY MEMBER COUNTRIES

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DECLARATION

This research project is my original work and has not been submitted for examination in any other university.

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DEDICATION

This research project is dedicated to my family; a special gratitude to my parents, Patrick and Jane Simiyu for your patience, support, encouragement and prayers. To my brothers and sisters; Noel, William, Sally and Faith, whose exemplar taught me to stay the course for what I aspire to achieve. My beloved children; Beracah and Victoria for your understanding and motivation

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LIST OF ABBREVIATIONS AND ACRONYMS

ANOVA	Analysis of Variance
EAC	East African Community
FAO	Food and Agriculture Organization
GDP	Gross Domestic Product
DSA	Debt Sustainability Analysis
EICV	Household Living Conditions Survey
IMF	International Monetary Fund
JICA	Japan International Cooperation Agency
KIHBS	Kenya Integrated Household Budget Surveys
MDG	Millennium Development Goals
MPF	Multidimensional Poverty Framework
MPI	Multidimensional Poverty Index
NBS	National Bureau of Statistics
NPV	Net Present Value
OECD	Organisation for Economic Co-operation and Development
OLS	Ordinary Least Squares
OPHI	Oxford Poverty and Human Development Initiative
PDMR	Public Debt Management Report
SDG	Sustainable Development Goals
UN	United Nations
UNFPA	United Nations Population Fund
USD	United States Dollar
WB	World Bank

ABSTRACT

The effect of increasing levels of public debt has become a great concern to most developing countries. As stated by the debt overhang hypothesis, high debt accumulation levels lower growth by restricting investments; as outstanding debt increases beyond a threshold level, governments begin to default due to a decline in their ability or willingness to repay its debts while avoiding the damaging effects of very high debt service. The research objective was to establish the effect that public debt has on the poverty levels of the EAC member countries. Public debt, debt service to government revenue, debt service to export ratio, population growth rate and unemployment rate were in this research all independent factors. The response variable that the scholar endeavored explaining was the poverty levels of the EAC member countries. The data was gathered on annual basis over a ten-year span (Jan 2011 to Dec 2020). A descriptive research design being utilized in the research, with a fixed effects model utilized in examining the interrelationships among the study variables. STATA was utilized in analyzing the data. The research conclusion produced 0.7621 R-square figure, signifying the selected independent variables can explain 76.21 percent variance in EAC member countries poverty levels, whereas 23.79 percent was as a result of other variables not explored in this research. The F statistic was significant at a 5% level with $p=0.000$, as per ANOVA outcomes. This infers that the model was satisfactory in explaining poverty levels in EAC member countries. The regression outcomes moreover discovered that public debt and debt service to government revenue have a negative significant impact on poverty levels in EAC member countries. The study also revealed that population growth rate has a positive and significant link with poverty levels in EAC member countries. The other independent variables (debt service to export ratio and unemployment rate) did not have a significant impact on poverty levels. The research recommends policy makers need in guaranteeing public debt is used properly since it will reduce poverty levels among EAC member countries. The research too recommends need in controlling and manage the current levels of population growth rate among EAC member countries as it is one of the factors accelerating poverty levels.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

The continued persistence of poverty in several developing nations in the world after countless attempts to eradicate poverty has intensified the interest to search for causes of poverty trap (Sachs 2005). Given their aspiration to accelerate economic growth and exit poverty traps, countries depend on public debt due to limited domestic resource mobilization. As public debt accumulates; payment of principal and interest increases, subsequently increasing government expenditure. Fosu, (2007) posited that expenditure on debt servicing might shift public spending away from job creation, health sector and education sectors which severely affects growth, thus developing a challenge towards poverty reduction.

Based on the debt overhang theory by Krugman (1988), a country's debt burden arises when the expected debt service falls short of the contractual value of the debt by exceeding the future repayment ability. This elaborates the indirect link between public debt and poverty levels due to its impact on economic growth; huge debt service reduces the capacity of governments to save and invest thus slowing down economic growth and consequently increases poverty. The crowding out effect neo-classicalist theory is of the view that the debt service burden on government reduces public spending by curtailing government resources available for poverty-related spending such as education and health. Moreover, a country's heavy debt burden crowds out public investment into the economy since government short term revenue must be used to service the debt (Serieux & Yiagadeesen, 2001).

The IMF, in its 2018 Regional Economic Outlook report for Sub-Saharan Africa has elevated an alarm over the rate at which EAC nations are accruing debt; with Kenya being the highest at a debt accumulation of 60.1% of GDP having surpassed the 50% debt ceiling. As EAC

countries accumulate debt beyond a threshold level, their ability to repay debts begins to fall thus shrinking financial resources and increasing budget deficits. The 2019 Country Briefings by the Oxford Poverty and Human Development Initiative (OPHI) indicate that South Sudan has the highest national poverty measure relative to the other EAC member states at 82.3% (2016), while poverty is lowest in Tanzania at 28.2% (2018). Kenya, Uganda, Tanzania and Rwanda have been successful in reducing number of individuals living below the national poverty line by an average of an annualized rate of 2 percentage points between 2004/05 and 2015/16; however, the absolute number of poor declined only marginally due to rapid population growth (WB, Country Poverty Assessment Reports 2018). South Sudan and Burundi are among the poorest countries globally; 4 out of every 5 people live below the international poverty line.

1.1.1 Public Debt

Bonga, Chirowa and Nyamapfeni, (2015) define public debt as money owed by governments from both foreign and domestic lenders; it increases as governments engage more on deficit spending. Debt is often sought to bridge the financial gaps in financing large infrastructure investments, leveraging economic crises, budget deficits, unforeseen calamities such as natural disasters and wars or even the increasing public expenditure (Aybarc, 2019). Were, (2001) refers to debt as an ideal tool towards economic growth given that it is financed efficiently and utilized productively on self-sustaining development projects. Economic growth is likely to be enhanced through the accumulation of capital and growth in productive capacity only at reasonable levels of borrowing by a country (Poirson, Ricci & Pattillo, 2004).

Excessive debt results in problems if the debt servicing capacity of a country does not keep pace with the growth of debt; in this case, governments spend more of their tax collections on

servicing the debts than delivering services to the citizens. Governments will borrow to service already existing debt, finance the ballooning recurrent government expenditures and fail to invest in development projects thus no new source of revenue is created to repay the debts in the future. Public debt can be raised either externally or internally, borrowing internally may be appealing; however, it often encounters challenges that steer a country to seek external debt. These challenges include; narrow tax bases, weak tax administration processes and under subscription of bonds and bills (Onyekwena & Ekeruche, 2019).

Public debt is usually expressed as GDP percentage and the percentage is used as an indicator on the ability and capacity of a country to service its debt. The IMF also outlines the following as conventional measures of a nation's debt burden; debt-to-exports ratio and the ratio of scheduled debt service to government revenues. Since external debt must be serviced by foreign exchange earned from exports, it is, therefore, paramount to use the debt service ratio as a measure of the debt burden caused by external debt. This study will focus on measuring the debt burden caused by a country incurring public debt by using the following macroeconomic indicators; debt service to government revenue and debt service export ratio.

1.1.2 Poverty Levels

According to the World Bank's 2015 Measured Approach to Ending Poverty Report, poverty is defined as a multidimensional aspect that entails: violence and crime, the inability in basic needs satisfaction, lack of education and shocks, lack of resource control, lack of political freedom and voice. Poverty reduction can be summarised as the collective responsibility to fight all types of deprivations with the purpose of escaping poverty and putting in place structures, institutions or societies that limit people from becoming poor or falling further into poverty (UN, 2006). All developing countries have poverty reduction as a key objective in

fostering economic growth (Feng, 2014); with food insecurity, unemployment rates, high illiteracy levels, health concerns, unsafe water and poor sanitation as priority development issues.

Pro-poor growth is also crucial to meeting the SDGs; which are a universal poverty call to action in eradicating poverty through the inclusion of the Leave No One behind principle. Following on the World Bank Goal and SDGs of ending poverty by 2030 in all its forms, Theoretical and empirical research establish that the rate of average income growth is a key determinant towards poverty reduction (Klasen, 2008). Countries with a higher average income will reduce poverty faster than those with lower income. However, certain unforeseen circumstances could slow down poverty reduction by 2030. Corona Virus, for example, has shook the entire globe making it extremely difficult to uplift the extremely poor mostly found in remote areas.

Foster, Greer, and Thorbecke (1984) propose the headcount ratio and the poverty gap as poverty measures which establish the magnitude and intensity of poverty based on national or international poverty lines and income levels. To truly depict the severity of poverty in Sub-Saharan African countries, Adeyemi, Ijaiya and Raheem (2009) propose the use of socio-economic indicators like per capita income, health care services access, life expectancy at birth, access to education, safe water access as well as access to sanitation facilities. As a result, this study measured poverty using the Multidimensional Poverty Framework developed by Alkire and Foster (2011) aimed at measuring poverty by outlining indicators based on the SDGs that capture the multiple deprivations faced by poor people regarding health, living standards and education. An adjustment was made on the Multidimensional Poverty Framework to better reflect the key deprivations faced by the poor in EAC countries that are aligned to the SDGs.

1.1.3 Public Debt and Poverty Levels

Poverty is majorly influenced by a country's economic growth evidenced by the relationship between national per capita and the poverty indicators (Ames, Brown, Devarajan & Izquierdo, 2001). Economic theories reveal that rational borrowing levels are more likely to spur economic growth in developing countries and presumably reduce poverty (Egbetunde, 2012). Owing to the fact that developing countries have few investment opportunities due to their limited capital stocks, economic growth can be sped up through external funding only if it is channelled to productive and income-generating activities and stabilization of a country's macroeconomics (Zaghdoudi & Hakimi, 2017).

Nonetheless, there exists a tipping point where increasing public debt decelerates economic growth and increases poverty (Akram, 2016). Similarly, unsustainable public debts not only pose a significant risk to the global achievements of SDGs especially ending extreme poverty but could also reverse the developmental progress made over the decade (Mustapha and Prizzon, 2018). However, provided the country can renegotiate and make necessary adjustments to its fiscal policy, public debt is designed to steer economies on a growth path through investments in infrastructure and human capital that will reduce poverty.

For EAC countries, the link amidst public debt and poverty reduction is equally driven by economic growth. Slowed economic growth is not a direct consequence of huge debt accumulation: it is a country's insufficient knowledge on the structure, nature and magnitude of the debt at hand reinforced by their inability to meet debt service payments (Were, 2001). The EAC countries lag behind in a number of important non-income wellbeing aspects, such as access to electricity, improved sanitation, child malnutrition and education (completion and progression). Progress towards poverty reduction remains elusive and temporary due to

economic shocks, food insecurity, and climate change and over reliance on the agricultural sector forcing the countries back into poverty (5th EAC Development Strategy).

1.1.4 East Africa Community Member Countries

The six Partner States that make up the East African Community (EAC) are the Republic of Burundi, Kenya, Rwanda, Uganda, the United Republic of Tanzania, and the Republic of South Sudan. The EAC's Treaty, which created the Community, serves as the basis for its operations. It was ratified by the original three Partner Countries, Kenya, Tanzania, and Uganda, on 7 July 2000, after it had been signed on 30 November 1999. On June 18, 2007, the Republics of Rwanda and Burundi ratified the EAC Treaty and, as of July 1, 2007, they were admitted as full members of the Community. The Republic of South Sudan joined the Treaty on April 15, 2016, and on August 15, 2016, it was admitted as a full Member (UNCTAD, 2018).

The East African Community (EAC) is one of Sub-Saharan Africa's fastest-growing regions, averaging 6.2 percent GDP growth in 2015 (5TH EAC Development Strategy). However, the IMF has raised an alarm on the high debt accumulation of the EAC countries that has resulted to a revision of debt stress levels. Tanzania’s DSA FY 2018/19 indicates that public debt accounted for 38.94% of GDP in 2018 attributed to major strategic infrastructure projects. Kenya’s public debt was 61.1% of GDP in 2019 largely on account of heavy commercial borrowing and exchange rate depreciation (PDMR, 2018/19). Rwanda’s Economic Report 2017/18 shows that public debt to GDP rose to 49.8% in 2018, mainly aimed at funding projects in transport, construction, energy, poverty reduction and rural development; it is assessed at low risk of debt distress.

South Sudan’s DSA for FY 2018/19 illustrates that its public debt was estimated at 34.2 percent of GDP with 30.2 percent attributed to external debt. Characterised by low foreign exchange reserves, low capacity to service debt and an accumulation of arrears; the country is in high

debt distress. Uganda's Report on Public Debt FY 2018/19 shows that public debt rose by 12.5 percent to USD 11.52 billion in 2018 from USD 10.24 billion in 2017 due to increased borrowing for infrastructure development, it is classified at low debt distress risk. Burundi's risk of debt distress remains high given its 63.5% public debt of GDP ratio in 2019 compared with 58.4% in 2018 (AfDB's Economic Outlook, 2018).

Given the regions high public debt that needs servicing lest they default has left the region without much of poverty reduction programs to fund. KIHBS 2005/06 and 2015/16 indicates that the national poverty rate in Kenya dropped from 46.8% in 2005/06 to 36.1% in 2015/16; this was ascribed to a modest progress in the country's living standards. Rwanda's EICV5 2016/17 indicates that poverty headcount in 2016/17 was 38.2%, compared to 39.1% in 2013/14 which was attributed to the 2% annual growth in household consumption. In Tanzania, the national poverty rate fell from 34.4% in 2007 to 26.4% in 2018; due to the gradual improvement in living conditions and human capital (Household Budget Surveys 2007 and 2018).

Uganda's National Household Survey 2006–2013 indicates that the state poverty rate reduced from 2006 31.1% to 19.7% in 2013 built on agricultural income growth; it increased to 21.4% in 2018 due to agro-climatic shocks forcing households back into poverty. Based on the Household Living Conditions Survey in Burundi in 2006 and 2014, the national poverty rate declined from 69% in 2006 to 65% in 2014. According to South Sudan (NBS) High Frequency Surveys 2015-17, national poverty rate increased from 66% in 2015 to 82% in 2016. The high poverty rates in Burundi and South Sudan is mainly attributed to a lack of institutional provision of services, a poorly functioning state and high political volatility; which placed them among the poorest countries in the world.

1.2 Research Problem

The effect of increasing levels of public debt has become a great concern to most developing countries (Thugge, 2008). As stated by the debt overhang hypothesis, high debt accumulation levels lower growth by restricting investments; as outstanding debt increases beyond a threshold level, governments begin to default due to a decline in their ability or willingness to repay its debts while avoiding the damaging effects of very high debt service. According to Lopes (2002), increasing social expenditure budgets is essential for eradicating poverty in less developed nations. High debt burden steers budgetary resources from investments, raise domestic interest rates thus discouraging private sector-led investment and employment and may lead to capital flight necessary to stimulate economic growth and consequently poverty reduction.

EAC member countries domestic resource mobilisation is very low with tax revenues below 15% of GDP thereby limiting funding to basic government functions (Anyanzwa, 2019). As a result, they have registered an increase in public debt, mainly attributed to filling budget deficits and covering their ever rising recurrent expenditures, for this reason, the region remained characterized by high poverty, inequality, and unemployment. In 2018, the East Africa countries average poverty headcount (33.3 percent at $1.90 a day and 55.3 percent at $3.10 a day) was relatively below the Sub-Saharan Africa average poverty headcount (42.1 percent at $1.90 a day and 66.3 percent at $3.10 a day) (East Africa Economic Outlook, 2019).

Global empirical studies show that country indebtedness indirectly impact poverty via investment and social expenditure crowding-out. Kemal (2001) study states that poverty is positively linked with debt; as total debt stock increases, so does the people living below the poverty line in Pakistan proportion. Zaghdoudi & Hakimi (2017) study supports the view that external debt increase poverty in developing countries. The studies are done collectively on

external debt in developing countries irrespective of differences in region; however, this study focuses on both external and domestic debt within the East African Community.

Regional studies conducted by Oyedele, Emerah and Ogege (2013) and Ozigbu (2018) both conclude that external debt and debt servicing increases the poverty headcount in Nigeria. The studies measure poverty based on its monetary aspects only, however this study measures poverty based on its multi-dimensional aspects which are key to poverty reduction. Saungweme and Shylet (2012) are of the view that external debt and its servicing have a negative effect on both income and non-income indicator of poverty in Zimbabwe; the study focuses extensively on external debt ignoring the effect of domestic debt. This study will assess the effect of public debt on poverty encompassing both external and domestic debt.

Sansa and Hasan (2020) findings show a negative insignificant link between public debt, economic growth and poverty reduction (measured by poverty headcount) in Tanzania. Sani (2018) study concludes that public indebtedness possesses substantial positive effect on poverty in sub-Saharan Africa. Both studies measure poverty based on the monetary aspects of poverty which becomes a challenge in the case of EAC countries that are characterized by a large informal sectors. Various public finance scholars have undertaken related studies on public debts greatly mainly regarding to economic growth based on the assumption that overall growth paves the way for poverty alleviation. The current research intends to fill these research gaps by answering the research question; what is the effect of public debt on poverty levels among the East Africa Community Member Countries?

1.3 Objective of the Study

The general objective of this study is to assess the effect of public debt on poverty levels among the East Africa Community Member Countries. The specific objectives were;

i. To determine the effect of debt service to revenue ratio on poverty levels among East Africa Community Member Countries
ii. To establish the effect of debt service to export ratio on poverty levels among East Africa Community Member Countries
iii. To assess the impact of population growth rate on poverty levels among East Africa Community Member Nations
iv. To determine the effect of unemployment rate on poverty levels among East Africa Community Member Countries

1.4 Value of the Study

This research builds on available knowledge and form a basic foundation for policy development aimed at a successful debt management policy that subsidizes to poverty reduction in the EAC. It seeks to inform policy makers on the need for prudent government debt management policies to protect the country from international financial shocks. Policy makers such as financial sector regulators, fiscal and monetary authorities and debt managers gain an understanding on the interdependencies and interconnections between their respective policy instruments; with regard to the levels of external debt, domestic investment and revenue distribution.

Given the rapidly changing economic environment, numerous measures and strategies have been put in place towards poverty reduction, yet poverty still is on the rise. This study shall provide a basis upon which the EAC governments should develop effective strategies and policies aimed at continuously supporting health conditions, education levels and living standards; since they significantly contribute to a reduction in poverty levels.

Additionally, public debt management is of paramount significance in the eradication of poverty. The IMF's Public debt management guidelines emphasis that, the main objective to

public debt management is ensuring government's payment obligations and their financing needs are met at the least possible cost, in line with a prudent risk degree. It additionally states that, in protecting governments from debt servicing shocks, sound risk management practices and borrowing limits should be put in place and adhered to.

CHAPTER TWO: LITERATURE REVIEW

2.1. Introduction

The chapter contains an evaluation of the literature on the effect of public debt on poverty levels as distinguished by various scholars and assesses the theoretical framework by searching for relevant literature, identifying the themes and gaps; thus providing a sound understanding of the state of knowledge on public debt impact on poverty. It further examines the determinants to poverty reduction, empirical literature that establishes the link between the two variables by reviewing conclusions from earlier studies and finally, the study presents the conceptual framework as well as literature review summary.

2.2. Theoretical Review

In view of the wide variety of public debt theories, they differ in terms of assumptions, ideological positions, attitudes and conclusions. Developing countries have pursued poverty reduction by putting into practice diverse tactics grounded on theories that are applicable to their prevailing economic conditions. The following are theories which deal with debt in this context;

2.2.1. The Functional Finance theory

The theory of functional finance developed by Lerner (1943) building on the summary given by the Keynesian prescription of deficit spending; is based on the principle of measuring how government fiscal operations work or function in the economy rather than their soundness or conventional morality. Taxation and borrowing, public expenditure, debt management, and deficit finance are examples of fiscal operations that ought to be planned with the aim of carrying out certain tasks that have both instant and long-term consequences on the economy.

The main focus of the theory is on government spending and taxation impact on employment and income levels of a country. Lerner (1943) postulates that the aim of government spending and taxing is to hold the economies total expenditures at compatible levels with favourable full employment at current price. Governments raise their total expenditure through reducing taxes and spending more mainly through major infrastructure projects so that its citizens have more money to spend. On the other hand, governments reduce total expenditure by lowering their spending levels or by increasing taxes so that tax payers have less money left to spend.

Lerner (1943) argues that public debt should only be incurred as a means of achieving the optimal rate of interest for private investment rather than as a means of balancing the budget. This theory holds that, the "National Debt's absolute size does not necessarily matter, irrespective of the high interest payments that are incurred, these do not result to any burden on the society as a whole." The theory adds value to the study by identifying that public debt accumulation does not create a burden on the economy; instead, its effect on the economy is aimed at fulfilling a defined function which is attaining full employment that subsequently increases income levels therefore reduces poverty.

2.2.2 Crowding-out Effect Theory

This theory was developed by McConnel and Brue (1990). According to Karazijiene (2015), this approach posits that the tendency of borrowing by a government increases interest rates in the credit market which is a blow to the private sector and thus it lowers the possibility of future investments. With these increasing interest rates and crowding out the private sector, higher national deficit has the influence of lowering business activities and also decreasing the growth of the economy according to Coupet (2017). This proposition of crowding-out effect is a section contained in the more diverge neoclassical hypothesis discussed by Lwanga and Mawejje (2014), which posits that underwriting debts leads to the crowding-out of investments

which consequently leads to low formation of capital. A consistent deficit of the budget is a tool that drains the national savings of a country (Hyman, 2014). The decrease in these savings may end up raising the real interest rates which in turn becomes a barrier to investment and consequently decelerate the growth of the economy.

A major constraint with the approach comes up because the approach requires full utilization of resources, but very occasional thrifts, Kenya included, are capable to accomplish. Similarly, this approach is also unfit in the study since it links fiscal dominance to private acquisition and savings. Also, it carries a hypothesis stating fiscal debts are only subsidized using fiscal sovereignty, even though alternatives like borrowing through bilateral and multilateral organizations exist (Coupet, 2017).

The approach applies to existing analysis since it identifies the significance of state renting to subsidize debt allocations because monetary organizations have little funds at their disposal to lend to the private sector. In case the approach is valid, public debts might carry a damaging impact on poverty levels in the long term through filling out all private investors and entrepreneurs. Therefore, borrowing of a state to inflate expenditure may lead to an increase in the interest rates that affects private investment and consequently financial growth. This theory hypothesizes a positive link between debt and poverty levels.

2.2.3 Debt Overhang Theory

The debt overhang theory was founded by Krugman (1988); debt overhang defined as “a condition where the anticipated payment of principal and interest on foreign debt incurred by a country falls short of its contractual value”. If a country accrues unsustainable levels of debt that exceeds its ability to repay by a given probability in the years to come, the expected debt service is anticipated to be a growing nation output level function. High foreign interest payments can raise domestic interest rates and also increase budget deficit, thereby slowing

investments and reducing public savings since a large share of a nation's financial resources are allocated to debt service.

The theory is of the premise that as the amount of outstanding debt surpasses a certain threshold level known as the debt overhang level; the ability or willingness of a country to repay its debts begins to diminish. This is predominantly the case when governments begin to default on debt payments so as to impede the adverse effects of very high debt service. Borensztein (1990) emphasizes that debt overhang is "a position in which the debtor country gains significantly low from the return of any additional investment due to the increasing debt service obligations."

On the other hand; Mesjasz (2011) states that a reduction in the face value of future debt obligations increases investment and the repayment capacity of a country that consequently leads to sustained economic growth which is a critical determinant to poverty reduction. However, if a country accumulates unsustainable debt, it lowers growth and further curtails government's savings, investments and social spending, thus reducing the potential for poverty-related spending (Clements, Rina & Nguyen 2005). This theory indicates that high levels of debt have an effect on poverty reduction due to the decreased levels of public investments.

2.3 Determinants of Poverty Levels

This segment offers the determinants of poverty levels. It has been globally acknowledged that poverty is a multidimensional issue and its reduction necessitates an in-depth and comprehensive approach to enhance the economic, socio-cultural, political, human and protective capabilities of the poor as outlined below:

2.3.1 Population Growth Rate

Malthus (1798) states that a continuous increase in population is detrimental to the economy of a nation due to the multiplicity of problems it causes; it mainly exerts a tremendous amount of pressure on a nation's resources that consequently results to a sequence of problems as the nation grows. The continued population growth leads to a demographic burden on the economy, which dilutes economic growth benefits. According to UNFPA 2014 Population and Poverty, unsustainable population growth limits government's ability to productively invest in poverty reduction projects therefore making poverty reduction slower than expected. Well-being and per capita income growth of a country is likely to decline as population grows rapidly (Ahlburg, 1994); accompanied by high fertility rates and the increased life expectancy, the absolute number of people living in poverty increases. A large working-age population and fewer dependents should enhance savings and investment as fertility rates decrease, lowering poverty levels (Bloom, Canning & Sevilla, 2003).

2.3.2 Economic Growth Rate

Economic growth plays a key role towards poverty reduction. A steeper decline in poverty rates has been associated with stronger economic growth, which is beneficial for the poor (Dollar, Kleineberg, and Kraay, 2016). According to Agrawal (2008), poverty reduction was largely a consequence of economic growth, which leads to increased employment levels and higher real wages; thus establishing economic growth as the cornerstone to increased income levels. More and better paying jobs have been crucial to lifting people out of poverty (World Bank, 2013). On the contrary, Ravallion's (1997) study established that despite good underlying growth prospects, poverty levels increase due to the inequality in income distribution among the poor.

2.3.3 Unemployment Rates

According to 2007 Report on the World Social Situation "The Employment Imperative", unemployment is at the core of poverty, the inability to earn a regular income is strongly linked to people ending up in poverty. The International Labor Organization (2005) states that the most fundamental strategy towards poverty reduction is employment. Increasing income of the poor through the creation of productive employment, is the best way to alleviate poverty, sustainable economic and social development (Karnani 2011).

Karnani (2007) asserts that creation of employment does not keep pace with economic growth: therefore, governments intervene by way of increasing budget deficit and rising public debt to create employment through investing in education, public health and infrastructure. This is done to increase the activities in the country's economy thus reducing unemployment (Ncanywa & Masoga 2018). However, if governments' levy new taxes to repay the debt, it reduces the tax payers' consumption and income levels; on the contrary, if the borrowed money is utilized in the domestic economy to boost its production capacity, output levels increase and consequently income and consumption levels increase, reducing unemployment and thus reducing poverty (Ostry, Ghosh & Espinoza 2015).

2.3.4 Public Debt

The shrinking domestic resource mobilization and increasing budget deficits among EAC partner states has immersed them into poverty traps characterized by unemployment, inability in paying for education, lack of medical care, poor sanitation, lack of industry growth and unaffordable goods and services. Governments accumulate debt out of desperation to exit poverty traps, with the aim of increasing resources for consumption smoothing and investment (Sanchez-Fung 2007).

As a country's debt levels increase, so does the debt servicing which consists principal and interest repayments; this subsequently rises government expenditure. According to Saeed (1993), as government expenditure builds up without a equivalent rise in revenue, budget deficit increases therefore creating the need for more borrowing. However, a reduction in debt leads to reduced debt service and further increased repayment capacity, therefore the amount of outstanding debt becomes more likely to be repaid (Krugman, 1988).

2.4 Empirical Review

Loko, Mlachila, Nallari and Kalonji (2003) explored the effect of external indebtedness on poverty in 67 lowincome nations between 1985 and 1999; by using the first-differenced general method (GMM) estimator. External debt is measured by nominal debt to GDP, GDP per capita, debt service to exports and NPV of debt to exports while poverty is measured by life expectancy, gross primary enrolment rates, infant mortality and income. The study's findings indicate that the external indebtedness indicators and high debt service have a negative impact on the identified poverty indicators

Zaghdoudi and Hakimi (2017) investigated external debt impact on poverty for 25 developing nations between 2000 and 2015; by using a panel co-integration model. Their findings indicate a strong, positive significant long-run link between gross domestic fixed investment, GDP per capita, external debt and poverty. The Granger-causality results indicate bidirectional causality between poverty and external debt in both short- and long-run, thus the study is of the view that external debt increases poverty in developing countries.

Sheikh and Alam (2013) performed a survey on external indebtedness impact on enhancing the poverty incidence in Pakistan using OLS technique during the year 1985-2010; by regressing poverty against per capita real GDP, unemployment rate, real wage rate, real external debt and real debt servicing on external debt. The conclusions indicate presence of positive and

statistically significant link between level of external debt, external debt servicing and poverty; thus enhancing the poverty level in Pakistan.

Oyedele, Emerah and Ogege (2013) assessed external debt and external debt servicing impact on poverty reduction in Nigeria between 1980 and 2010 by empirically using OLS regression and the co-integration technique. Debt was measured using its ratio to GDP and debt servicing by the debt service payments as a ratio of exports whereas poverty reduction was measured on the basis of public expenditure on social goods and services as GDP ratio. The findings discovered that debt service ratios and debt income are negatively linked to poverty reduction, implying that external debt and debt servicing increases poverty in Nigeria.

Saungweme and Mufandaedza (2012) analysed the impact of external indebtedness on poverty indicators in Zimbabwe from 1980 to 2010. OLS regression estimates indicate that external debt as export ratio and GDP ratio positively and significantly affect the poverty income indicators. External debt and its servicing are also viewed to possess negative impact on non-income poverty indicators such as mortality rate and life expectancy rate.

Ozigbu (2018) examined the impacts of external debt stock, external debt servicing on poverty headcount. This was assessed via the Stock-Watson Dynamic Least Squares (DOLS); result discloses the series have long run link and that external debt stock as a percentage of GNI has a substantial positive link with poverty headcount.

Sansa (2020) conducted a study to assess public debt impact on poverty and economic growth throughout the duration from 2000 to 2018 in Tanzania by employing the multiple linear regression models; using public debt as an independent variable whereas gross domestic product (GDP) and poverty as dependent variables. The research's discoveries indicate a negative insignificant link between the public debt and entire research dependent macroeconomic variables.

Sani (2018) examined the link between public indebtedness and poverty incidence in 42 sub-Saharan Africa via the GMM approach. The results established public indebtedness possess substantial positive effect on poverty in SSA by impeding successful alleviation of poverty. They advise that in order to reduce poverty, appropriate domestic resource exploitation and public debt accumulation are required.

Fan, Nyange and Rao (2005) study on poverty reduction and public investment in Tanzania for the year 2000/01; estimated the changes in a household's poverty status and the increase in their income level as a result of improved human capital and access to infrastructure and technology. The results show a positive statistically significant impact of investment in human capital, education, rural roads and agricultural research on poverty reduction.

2.5 Conceptual Framework

The conceptual framework of this study sought to analyse the mechanism through which public debt affects the multidimensional poverty levels; the dependent variable was poverty and the independent variable was public debt as indicated in figure 2.1 below.

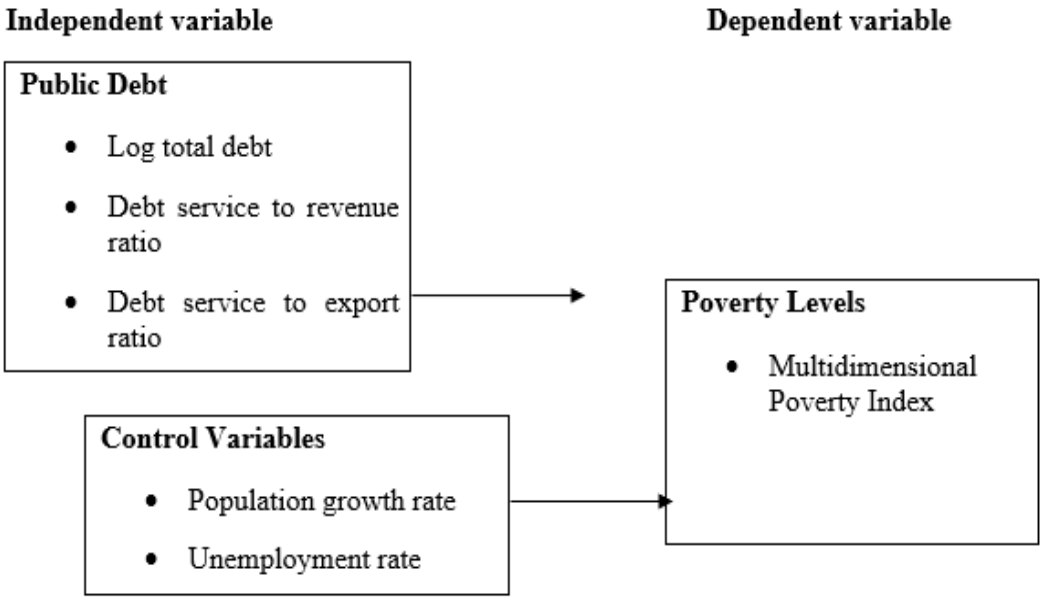

Figure 2.1: Conceptual Model
Source: Author (2022)

2.6 Summary of Literature Review

Author of study	Focus of Study	Methodology	Findings	Knowledge Gaps	Focus of current study
Loko, Mlachila, Nallari and Kalonji (2003)	The impact of External Indebtedness on Poverty in Low income countries	First-differenced General method of moments (GMM) estimator	External indebtedness has an adverse effect on non-income poverty indicators	Focuses exclusively on external debt	Assesses the impact of public debt.
Zaghdoudi and Hakimi (2017)	Impact of External Debt on Poverty in developing countries	Panel co-integration model	External debt has a positive and significant long-run	Focuses collectively on developing countries ignoring	Focuses on EAC member countries.

Author of study	Focus of Study	Methodology	Findings	Knowledge Gaps	Focus of current study
			relationship with poverty.	differences in region.	
Saungweme and Mufandaedza (2012)	Effect of external indebtedness on the poverty indicators of Zimbabwe	OLS technique.	External indebtedness affect income and non-income poverty indicators significantly and positively	Study was done in Zimbabwe that is faced by different economic conditions compared to EAC.	Focuses on the EAC member countries.
Ozigbu (2018)	Implications of public debt sustainability on poverty in Nigeria.	Stock-Watson Dynamic Least Squares (DOLS)	External debt as a percentage of GNI has a positive relationship with poverty.	Focuses exclusively on external debt and measures poverty based on poverty index.	Assesses the impact of public debt on the multi-dimension aspects of poverty.
Sani (2018)	Public indebtedness and the incidence of poverty in Sub-Saharan Africa.	Generalized Method of Moment approach	Public indebtedness has a significant positive impact on poverty	Measures the monetary aspects of poverty only.	Assesses the multi-dimension aspects of poverty in EAC.

Author of study	Focus of Study	Methodology	Findings	Knowledge Gaps	Focus of current study
Fan, Nyange & Rao (2005)	Public investments and poverty reduction in Tanzania	Multiple Linear Regression	Strong and positive statistically significant impact of public investment on poverty reduction	Measures poverty using income indicator does not include non-income poverty indicators	Focuses on effect of public debt on non-income poverty indicators in EAC countries.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter gives a description of the research design used to conduct the study, specifies the study population, the variables to be used in the study and their measurement, data collection methods, analytical model, diagnostic tests and data analysis methods.

3.2 Research Design

Research is an organized, systematic effort to investigate a specific issue and offer a solution (Sekaran; 2000). It is a detailed plan to conducting the study, by answering the research objectives accurately, economically and with validity. This research made use of a descriptive research design in assessing the effect of public debt on EAC's poverty level using the Multidimensional Poverty Index. A descriptive research design, as per Mugenda and Mugenda (2003), is an organized empirical study where researcher has no direct control over the independent variables since they already manifested themselves or because they are fundamentally unmanageable. Because the study aimed to create a profile of the connection between public debt and poverty levels, a descriptive research design was more suitable.

3.3 Population

The research's target population comprised of data on public debt indicators and poverty indicators data from the seven East African Community member countries; Republics of: Burundi, Kenya, Rwanda, Uganda, the United Republic of Tanzania, the Republic of South Sudan and the Democratic Republic of Congo (DRC). Since DRC, has just recently joined EAC, it was excluded from the final analysis.

3.4 Data Collection

The research utilized secondary data obtained via data collection sheets in Appendix 1 for the period 2011 to 2020. The data was collected from reports and documents of the National Bureau of Statistics and the National Treasuries of the six EAC partner states and the EAC Data Portal to analyse public debt; debt service to government revenue and debt service export ratio. Data on the multidimensional poverty index; was obtained from the World Development Indicators by World Bank and the United Nations Database.

3.5 Data Analysis

Data analysis was utilized in answering the research objective by investigating the relationships between variables. The data collected on public debt and poverty indicators was analysed using panel data analysis technique with an aid of a statistical software package known as STATA. In building an appropriate structure for assessing public debt impact on poverty levels, relevant economic theories and empirical studies were examined.

3.5.1 Analytical Model

The analytical model employed by this research was in the form of a panel regression model where multidimensional poverty index was regressed against the public debt indicators. Public debt indicators included; total debt, debt service to government revenue and debt service export ratio while poverty index was the dependent variable. The control variables were population growth rate and unemployment rate. The regression function took the form below;

The following equation was applicable:

$$PL_t = \beta_0 + \beta_1 PD_{it} + \beta_2 DSR_{it} + \beta_3 DSE_{it} + \beta_4 PGR_{it} + \beta_5 UR_{it} + \varepsilon$$

Where: PL_t = Poverty levels measured using the Multidimensional Poverty Index

β_0 =y intercept of the regression equation.

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ =are the regression coefficients

PD_{it} = Public debt measured as log total debt

DSR_{it} = Debt service measured as ratio of debt service to government revenue

DSE_{it} = Debt service measured as a ratio of debt service to export ratio

PGR_{it} = Population growth measured using annual population growth rate

UR_{it} = Unemployment measured using annual unemployment rate

ε =error term

3.5.2 Diagnostic Tests

The panel data methodology comprises of fixed effects model and the random effect. To select between random and fixed effects model, Hausman test was employed. The null hypothesis of Hausman test was that the data fits random effects model against alternative hypothesis that states that the data fits fixed effects model (Khan, 2008). This study utilized Hausman test to choose between fixed and random effects model. Relevant diagnostic test for this study included; multicollinearity, normality, unit root, homoscedasticity and autocorrelation. Diagnostic tests that measure data reliability included test retest correlation which measures the consistency in the same group of data at different times by graphing the data in a scatterplot and computing Pearson's correlation coefficient.

3.5.3 Tests of Significance

In measuring the effect of public debt on poverty levels; the significance of the model was tested using an Analysis of Variance (ANOVA). The study analysed the significance value after extracting the ANOVA statistics using a 95% confidence level and 5% significance level. The model's overall significance in assessing the effect of public debt on poverty levels was determined by comparing the calculated F value and the critical value.

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND FINDINGS

4.1 Introduction

This chapter presents the findings of this research. The main aim of the study was to determine how public debt influence poverty levels in EAC member countries. This chapter covers descriptive statistics, diagnostic tests, correlation analysis, regression analysis and discussion of results.

4.2 Descriptive Analysis

Descriptive statistics of all variables on which analysis was done are listed in Table 4.1. Annual information was gathered and analyzed via STATA version 16 software during a ten-year period (2011 to 2020). The data was for the six EAC member countries.

Table 4.1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
PovertyIndex	60	44.33067	21.09486	18.43	83.33
Logtotaldebt	60	17.38077	1.837529	14.63088	20.56083
Debtservic~n	60	22.47575	12.7316	.355	54.6
Debtservic~o	60	10.07801	6.828108	.128	22.87
Population~e	60	3.036333	1.580636	.96	13.62
Unemployme~e	60	9.021667	4.356919	1.9	18.8

Source: Research Findings (2022)

Table 4.1 reveals that the number of observations were 60 which is the number of EAC member countries multiplied by number of years which were 10 (2011 to 2020). The results further reveal that the mean poverty index for the 10 year period was 44.33 with a standard deviation of 21.09. The natural logarithm of total debt had a mean of 17.38 with a 1.83 standard deviation

whereas debt service as a ratio of government revenue possessed a 22.475 mean with a 12.73 standard deviation. Further, the debt service to export ratio had a mean of 10.078 and 6.828 standard deviation. For the control variables, population growth rate had a mean of 3.036 with a standard deviation of 1.58 while unemployment rate had a mean of 9.02 with a 4.36 standard deviation.

4.3 Diagnostic Tests

Diagnostic tests were done before conducting the regression model. Multicollinearity, normality, autocorrelation, heteroskedasticity tests, stationarity tests and Hausman tests were all performed in this instance.

4.3.1 Multicollinearity Test

In a multiple regression model, multicollinearity is displayed whenever predictor variables exhibit a substantial relationship. An event where independent variables have great correlations is unfortunate. Parameters are said to have multicollinearity if they have a perfect linear connection. Outcomes for the test on multicollinearity were displayed in Table 4.2.

Table 4.2: Multicollinearity Test

Variable	VIF	1/VIF
Debtservic~o	2.12	0.472292
Logtotaldebt	1.59	0.628250
Debtservic~n	1.56	0.641560
Unemployme~e	1.27	0.786219
Population~e	1.12	0.889784
Mean VIF	1.53	

Source: Research Findings (2022)

VIF value is used where values that fall below 10 are not multi-linear. One condition for multiple regressions to occur is that no strong connection should be evidenced among variables.

Given by the outcomes, every VIF variable is below 10 as indicated in table 4.2 which shows that independent variables in the study experience no significant statistical multi-linearity.

4.3.2 Normality Test

To test whether the data was normally distributed, the researcher used the Jarque-Bera tests. The assumption that the data is normally distributed is made if the p-value is above 0.05, and the opposite is also true. The test's outcomes are reported in Table 4.3.

Table 4.3: Normality Test

	Jarque-Bera Coefficient	**P-value**
PovertyIndex	2.587	0.300
Logtotaldebt	5.304	0.402
Debtservic~n	1.763	0.215
Debtservic~o	2.153	0.227
Population~e	1.573	0.198
Unemployme~e	3.145	0.321

Source: Research Findings (2022)

Since the data displayed a p value of above 0.05 therefore having a uniform distribution, the researcher adopted the alternative hypothesis. This data was fit to be subjected to tests for variance, regression as well as Pearson Correlation analysis.

4.3.3 Autocorrelation Test

A serial correlation test established the relationship of error terms for different times. For the research to obtain the desired model parameters, the Durbin Watson serial correlation test was used to carry out the analysis of autocorrelation in the data, a major shortcoming in the data analysis that must be examined. Table 4.4 presents the findings.

Table 4.4: Autocorrelation Test

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.894[a]	.798	.780	9.8990848	1.589

a. Predictors: (Constant), Unemployment rate, Population growth rate, Log total debt, Debt service to government revenue, Debt service to export ratio

b. Dependent Variable: Poverty Index

Source: Research Findings (2022)

From the null hypothesis, no first-order serial/auto correlation exists. The 1.589 Durbin Watson statistical varies from 1.5 to 2.5 indicating no serial correlation.

4.3.4 Heteroskedasticity Test

The residual variance from the model must be constant and unrelated to the independent variable in linear regression models calculated using the Ordinary Least Squares method(s). Homoskedasticity denotes constant variance, whereas heteroscedasticity refers to non-constant variance. The study used the Breusch-Pagan/Cook-Weisberg test to check if the variation was heteroskedastic. The null hypothesis implies constant variance, indicating that the data is homoscedastic. The results are as shown in Table 4.5.

Table 4.5: Heteroskedasticity Test

Breusch-Pagan / Cook-Weisberg test for heteroscedasticity		
chi2(1)	=	0.4367
Prob > chi2	=	0.2428

Source: Research Findings (2022)

The null hypothesis of Homoskedastic error terms is not rejected as the 0.2428 p value exceeds 0.05 according to the results in Table 4.5

4.3.5 Stationarity Test

The research variables were subjected to a unit-root test to establish if the data was stationary. The unit root test was Levin-Lin Chu test. With a standard statistical significance level of 5%, the test was compared to their corresponding p-values. In this test, the null hypothesis states

that every variable possess unit root, and the alternative hypothesis is that the variables are stationary. The Levin-Lin Chu unit root test outcomes are listed in Table 4.6.

Table 4.6: Levin-Lin Chu unit-root test

Levin-Lin Chu unit-root test		
Variable	**Hypothesis**	**p value**
PovertyIndex	Ho: Panels contain unit roots	0.0000
Logtotaldebt	Ho: Panels contain unit roots	0.0000
Debtservic~n	Ho: Panels contain unit roots	0.0000
Debtservic~o	Ho: Panels contain unit roots	0.0001
Population~e	Ho: Panels contain unit roots	0.0001
Unemployme~e	Ho: Panels contain unit roots	0.0000

Source: Research Findings (2022)

As demonstrated in Table 4.6, this test concludes that the data is stationary at a 5% level of statistical significance since the p-values all fall below 0.05.

4.3.6 Hausman Test

Whenever using panel data, it is necessary to establish if a fixed or random effect model is more desirable. For the purpose of choosing the best panel regression model, the Hausman specification test was used. In essence, a Hausman specification test determines if the unique errors have a relationship to the regressors, with the null hypothesis being that they do not (random effect is preferred). Fixed effects were utilized when the P-value was significant (below 0.05), while random effects were used otherwise. The Hausman test outcomes are shown in the Table 4.7

Table 4.7: Hausman Test

	Coefficients (b) fe	(B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
Logtotaldebt	.5183687	-.1921883	.710557	.1561148
Debtservic~n	.8715456	.716154	.1553916	.
Debtservic~o	.2012739	.074564	.1267099	.
Population~e	.0533177	.056067	-.0027493	.00747
Unemployme~e	-.012328	-.085953	.073625	.0143594

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(5) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 25.13
Prob>chi2 = 0.0001
(V_b-V_B is not positive definite)

Source: Research Findings (2022)

Since the p value of 0.0001 is less than 0.05, a fixed effects model was adopted for the study.

4.4 Correlation Analysis

Pearson correlation was used in examining the correlations between poverty levels of the EAC member countries economy and the research's selected explanatory variables (log public debt, debt service to government revenue, debt service to export ratio, population growth rate and unemployment rate). As per to the conclusions, there was a strong negative and significant relationship between public debt and poverty levels (r = -.8352, p = .0000). The findings further revealed a weak negative and not statistically significant relationship between debt service to government revenue with poverty levels (r = -.0292, p = .8248). Debt service to export ratio has a moderate, positive and significant relationship with poverty levels of the EAC member countries (r = .4817, p = .0001). Population growth rate exhibited a weak positive and significant relationship with poverty levels (r = .3238, p = .0116). The outcomes too discovered

a positive but not significant link between unemployment rate and poverty levels of the EAC member countries (r = .0095, p = .9426).

Table 4.8: Correlation Analysis

	Povert~x	Logtot~t	Debtse~n	Debtse~o	Popula~e	Unempl~e
PovertyIndex	1.0000					
Logtotaldebt	-0.8352*	1.0000				
	0.0000					
Debtservic~n	-0.0292	-0.1847	1.0000			
	0.8248	0.1578				
Debtservic~o	0.4817*	-0.4939*	0.5641*	1.0000		
	0.0001	0.0001	0.0000			
Population~e	0.3238*	-0.3038*	0.0954	0.0769	1.0000	
	0.0116	0.0183	0.4682	0.5591		
Unemployme~e	0.0095	0.0556	0.3539*	0.3470*	-0.0448	1.0000
	0.9426	0.6731	0.0055	0.0066	0.7341	

Source: Research Findings (2022)

4.5 Regression Analysis

To know the degree to which poverty levels is described by the chosen variables, regression analysis was used. In the table below the regression's findings were displayed. Through the conclusions as epitomized by the altered R^2, the studied independent variables explained variations of 0.7621 in poverty levels among EAC member countries. This suggests that other factors account for 23.79% of the variability in poverty levels among EAC member countries, while the five variables account for 76.21% of those variations. The significance level of the data was 0.000, according to Table 4.9's ANOVA results, which proposes that the model is the best choice for drawing variables conclusions.

Table 4.9: Regression Results

```
Fixed-effects (within) regression               Number of obs      =        60
Group variable: ID                              Number of groups   =         6

R-sq:                                           Obs per group:
     within  = 0.5520                                         min =        10
     between = 0.8535                                         avg =      10.0
     overall = 0.7621                                         max =        10

                                                F(5,49)            =     12.08
corr(u_i, Xb)  = 0.8065                         Prob > F           =    0.0000
```

PovertyIndex	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
Logtotaldebt	-2.190737	.5037449	-4.35	0.000	-3.20305	-1.178424
Debtservicetogovernmentreven	-.155637	.0340048	-4.58	0.000	-.2239723	-.0873018
Debtservicetoexportratio	.1191441	.067519	1.76	0.084	-.0165403	.2548285
Populationgrowthrate	.3500517	.1699753	2.06	0.045	.0084735	.6916298
Unemploymentrate	-.0174716	.0781181	-0.22	0.824	-.1744558	.1395126
_cons	83.79944	9.088152	9.22	0.000	65.53612	102.0628
sigma_u	18.647652					
sigma_e	1.8526036					
rho	.99022647	(fraction of variance due to u_i)				

```
F test that all u_i=0: F(5, 49) = 298.18                     Prob > F = 0.0000
```

Source: Research Findings (2022)

The multivariate regression analysis further revealed that individually, both log of total debt and debt service to government revenue had a negative effect on poverty levels among EAC member countries as shown by (β value is -2.1907, p value is 0.0000) and (β value is -0.1556, p value is 0.0000) correspondingly. Debt service to export ratio unveiled a positive influence though not statistically significant on poverty levels among EAC member countries. The control variable population growth rate displayed a positive and significant poverty levels among EAC member countries influence as shown by (β value is 0.3501, p value is 0.0045) while leverage displayed a negative and not significant poverty level influence as shown by (β=-0.0175, p=0.824).

4.6 Discussion of Research Findings

The research objective was to see how log of public debt, debt service to government revenue, debt service to export ratio, population growth rate and unemployment rate affected the poverty levels of EAC member countries. Log of public debt, debt service to government revenue and debt service to export ratio were used as measures of public debt whereas population growth rate and unemployment rate were used as control variables. The research intended explaining the poverty levels as a dependent variable. The multidimensional poverty index was useful in assessing poverty levels. Descriptive and inferential statistics being utilized in the analysis of data. The outcomes are elaborated in this part.

The Pearson model discovered a strong negative and significant relationship between public debt and poverty levels ($r = -.8352$, $p = .0000$). The findings further revealed a weak negative statistically insignificant relationship amidst debt service to government revenue with poverty levels ($r = -.0292$, $p = .8248$). Debt service to export ratio has a moderate, positive and significant relationship with poverty levels of the EAC member countries ($r = .4817$, $p = .0001$). Population growth rate exhibited a weak positive and significant relationship with poverty levels ($r = .3238$, $p = .0116$). The outcomes too discovered a positive though insignificant link between unemployment rate and poverty levels of the EAC member countries ($r = .0095$, $p = .9426$).

Multivariate regression outcomes revealed that the R-squared was 0.7621 suggesting that 76.21% of poverty levels among EAC member countries are due to the five variables selected for this study. This means that variables not considered explain 23.79% of changes in poverty levels among EAC member countries. The overall model being statistically significant and had a 0.000 p value that is below the 0.05 significance level. This suggests that the overall model had the required goodness of fit.

The model coefficients revealed that both log of total debt and debt service to government revenue had a negative effect on poverty levels among EAC member countries as shown by (β value is -2.1907, p value is 0.0000) and (β value is -0.1556, p value is 0.0000) correspondingly. Debt service to export ratio unveiled a positive influence though not statistically significant on poverty levels among EAC member countries. The control variable population growth rate displayed a positive and significant poverty levels among EAC member countries influence as shown by (β value is 0.3501, p value is 0.0045) while leverage displayed a negative and not significant poverty level influence as shown by (β=-0.0175, p=0.824).

This research is in agreement with Loko, Mlachila, Nallari and Kalonji (2003) who explored external indebtedness impact on poverty in 67 low income nations between 1985 and 1999; by using the first-differenced general method (GMM) estimator. External debt is measured by nominal debt to GDP, GDP per capita, debt service to exports and NPV of debt to exports while poverty is measured by life expectancy, gross primary enrolment rates, infant mortality and income. The study's findings indicate that the external indebtedness indicators and high debt service have an adverse impact on the identified poverty indicators.

This study is also in agreement with Oyedele, Emerah and Ogege (2013) who assessed the impact of external debt and external debt servicing on poverty reduction in Nigeria between 1980 and 2010 by empirically using OLS regression and the co-integration technique. Debt was measured using its ratio to GDP and debt servicing by the debt service payments as a ratio of exports whereas poverty reduction was measured on the basis of public expenditure on social goods and services as a ratio of GDP. The findings determined that debt service ratios and debt income are negatively linked to poverty reduction.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The major motive of this research was establishing the way public debt influences poverty levels in EAC member countries. The findings from the above sections are outlined in this chapter together with the conclusions and limitations of this study. This section also outlines the strategies that can be adopted by policymakers. It also provides the recommendations.

5.2 Summary of Findings

The survey assessed public debt contribution to the poverty levels of the EAC member countries. Log public debt, debt service to government revenue, debt service to export ratio, population growth rate and unemployment rate all being encompassed in the research as predictor variables. The research made use of descriptive design in analysis as well as data collection. The data was collected from reports and documents of the National Bureau of Statistics and the National Treasuries of the six EAC partner states and the EAC Data Portal. Data on poverty levels was obtained from World Bank database and United Nations database. Data over 10 year duration (2011 to 2020) was used.

The discoveries exposed a strong negative and significant relationship between public debt and poverty levels. The findings further revealed a weak negative and not statistically significant relationship between debt service to government revenue with poverty levels. Debt service to export ratio has a moderate, positive significant link with poverty levels of the EAC member countries. Population growth rate exhibited a weak positive and significant relationship with poverty levels. The outcomes too discovered a positive though insignificant link between unemployment rate and poverty levels of the EAC member countries.

Multivariate regression outcomes revealed that the R-squared was 0.7621 suggesting that 76.21% of poverty levels among EAC member countries are due to the five variables selected for this study. This means that variables not considered explain 23.79% of changes in poverty levels among EAC member countries. The general model was statistically significant and had a p value of 0.000 that is below the 0.05 significance level. This suggests that the overall model had the required goodness of fit.

The model coefficients revealed that both log of total debt and debt service to government revenue had a negative effect on poverty levels among EAC member countries as shown by (β value is -2.1907, p value is 0.0000) and (β value is -0.1556, p value is 0.0000) correspondingly. Debt service to export ratio unveiled a positive influence though not statistically significant on poverty levels among EAC member countries. The control variable population growth rate displayed a positive and significant poverty levels among EAC member countries influence as shown by (β value is 0.3501, p value is 0.0045) while leverage displayed a negative and not significant poverty level influence as shown by (β=-0.0175, p=0.824).

5.3 Conclusions

The research conclusions designate that EAC member countries poverty levels are negatively impacted by public debt. The study discovered rise in public debt yields a significant decrease in poverty levels. It too discovered that debt service to government revenue possess significant negative impact on poverty levels in EAC member countries. Whereas debt service to export ratio possesses positive impact on poverty levels, the impact is not statistically significant. The findings further reveal that population growth rate has a positive effect on poverty levels implying that a rise in population growth rate accelerates the poverty levels in EAC member countries. Unemployment rate was discovered to lack a significant impact on poverty levels in EAC member countries.

This research finds that Log of public debt, debt service to government revenue, debt service to export ratio, population growth rate and unemployment rate – influence poverty levels by explaining 76.21% of its variations in EAC member countries. This means that variables not considered explain 23.79% of changes in poverty levels among EAC member countries. The overall model was statistically significant and had a 0.000p value that is below the 0.05 significance level. This suggests that the overall model had the required goodness of fit.

The research conclusions concur to Saungweme and Mufandaedza (2012) who analysed the impact of external indebtedness on poverty indicators in Zimbabwe from 1980 to 2010. OLS regression estimates indicate that external debt as a ratio of exports and a ratio of GDP positively and significantly affect the poverty income indicators. External debt and its servicing are also viewed to have an adverse impact on non-income poverty indicators such as mortality rate and life expectancy rate.

5.4 Recommendations

The conclusions depict that public debt has a negative and significant effect on EAC member countries' poverty levels. This implies that EAC members with higher public debt are likely to have low poverty levels compared to EAC member countries with low public debt. The report urges policymakers in all of the EAC member nations to make sure that the public debt obtained is utilized for spending on development because this possess positive influence on the economy and reduce poverty levels.

The results of this research have shown that the debt service to revenue ratio has a negative and substantial effect on the poverty levels in EAC member countries. The research recommends required steps to ensure that public debt servicing is done on a timely basis to ensure that the countries are not blacklisted by the creditors. Further, policy makers should come with

measures aimed at increasing the government revenues that are used to repay the public debt without hurting the production ability of the economy.

The research further displayed population growth rate possess positive effect on poverty levels among EAC member countries. This implies that high population growth rate is a factor that accelerates poverty levels. The study recommends the need for mass education on birth control. The governments of the EAC member nations should commit resources in educating their citizens on the available avenues for family planning and the reasons why birth control is important.

5.5 Limitations of the Study

The research embraced a 10 years period (2011-2020). It gives no substantial evidence that in an added timeframe, the findings will not change. Moreover, it is uncertain that these conclusions will be sustained after 2021, things might change. Extra timeframe is reliable because it comprises instances with economic shifts like recessions and booms.

The main drawback of the research was the data quality. It is not possible to reliably state the results obtained in the survey as the correct reflection of the general situation. Accuracy and reliability of the data collected are assumed to a certain point. Additionally, because of the existing circumstances, computing the data has been incoherent. This study uses secondary data as opposed to primary data. The determinants of poverty levels have been partially considered because of unavailability of data for all determinants.

Regression models were used to conduct data analysis. It might be impossible for the researchers to generalize outcomes because of the setbacks accruing from model utilization like erroneous and deceptive conclusions resultant from variable value alteration. Whenever data is put in a regression model, it is impossible to process it through another previous model.

5.6 Further Research Suggestions

The aim of the study was determining public debt impact on poverty levels among EAC member countries. A research that focuses on primary data or mixes primary data with secondary data is recommended so as to recognize qualitative elements that might have been overlooked in the current research.

This research failed to consider all independent variables that affect poverty levels in an economy. A suggestion therefore arises to include other factors in future studies in order to come up with more specific findings. These factors include corruption levels, economic growth, financial literacy, foreign direct investments among others. Providing details how each of them affects poverty levels will enable policymakers make decision on the steps to take in order to control their poverty levels.

Because of unavailability of data, this study focused on the latest 10 years. Other future studies should employ a wider range to come up with a valid conclusion. This study was also under restriction because it only focused solely on EAC member countries. Additional survey should be conducted in other nations to determine results. In conclusion, the investigator adopted a regression model to do a confirmation or rejection of the findings. Any studies in future should adopt other independent methods to confirm or reject their findings.

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APPENDICES

Appendix 1: Research Data

Country	Year	PI	LTD	DSGR	DSER	PGR	UR
Kenya	2011	40.44	18.315	16.000	20.000	2.600	12.700
	2012	39.33	18.431	17.000	22.870	3.040	12.700
	2013	38.22	18.980	29.000	16.780	2.700	12.700
	2014	37.44	19.300	33.000	22.560	2.870	12.700
	2015	36.10	19.787	0.380	0.216	2.790	13.000
	2016	34.22	19.874	0.371	0.128	2.710	7.400
	2017	33.56	19.954	0.355	0.164	2.640	7.400
	2018	33.04	20.210	0.438	0.405	1.070	7.400
	2019	32.24	20.561	0.567	0.601	1.060	5.300
	2020	32.00	20.295	0.414	0.374	2.270	5.300
Uganda	2011	18.43	20.537	15.000	1.400	3.250	6.700
	2012	19.70	20.422	15.800	1.358	2.830	6.900
	2013	22.34	20.449	16.900	1.748	3.060	9.400
	2014	22.43	20.107	18.880	4.183	2.770	9.400
	2015	21.90	18.652	19.620	1.991	2.470	9.400
	2016	21.40	18.603	20.330	17.374	3.220	9.400
	2017	21.35	18.498	24.800	3.657	3.230	9.400
	2018	20.90	18.764	37.860	8.635	3.240	9.400
	2019	20.30	18.872	42.300	4.714	3.220	9.200
	2020	19.99	18.921	40.540	12.108	3.180	9.200
Tanzania	2011	33.23	17.553	12.340	1.934	1.370	11.000

Country	Year	PI	LTD	DSGR	DSER	PGR	UR
	2012	32.56	17.281	13.200	1.910	0.960	11.000
	2013	32.00	17.342	14.560	2.885	3.180	11.000
	2014	31.22	16.649	13.440	3.512	3.180	10.300
	2015	30.34	17.974	15.300	5.602	3.190	10.100
	2016	28.70	18.258	34.500	8.591	3.210	10.000
	2017	26.40	18.380	43.400	10.116	3.170	9.900
	2018	25.34	18.106	54.600	12.120	3.130	9.700
	2019	24.60	18.359	48.700	12.557	3.140	9.600
	2020	23.34	18.265	45.500	14.601	3.110	9.500
Rwanda	2011	40.22	17.728	14.300	4.775	2.000	2.200
	2012	39.01	17.358	15.450	7.542	3.330	2.200
	2013	39.10	16.811	16.430	8.315	1.520	2.200
	2014	38.64	16.649	20.220	12.605	2.800	2.000
	2015	38.40	16.524	23.450	12.645	2.730	2.000
	2016	38.20	16.811	24.440	14.563	1.770	18.800
	2017	37.24	16.994	25.230	12.707	2.610	17.300
	2018	36.33	16.811	34.230	12.753	2.540	15.100
	2019	35.23	17.371	35.600	14.314	1.650	15.200
	2020	33.43	16.968	39.500	14.619	2.950	17.800
South Sudan	2011	83.33	14.631	14.450	8.320	4.270	12.600
	2012	82.90	15.060	15.300	10.340	4.190	12.600
	2013	82.77	15.551	16.200	12.340	4.080	12.600
	2014	82.60	15.320	27.440	20.340	3.960	12.500
	2015	82.40	15.425	28.450	19.450	3.920	12.400

Country	Year	PI	LTD	DSGR	DSER	PGR	UR
	2016	82.30	15.202	30.220	20.450	3.870	12.400
	2017	81.90	15.202	33.450	18.230	3.880	12.200
	2018	80.22	14.914	34.430	19.450	3.840	12.100
	2019	78.92	15.333	34.430	21.230	3.870	12.000
	2020	76.44	15.425	37.450	20.800	3.520	12.700
Burundi	2011	65.50	15.054	14.300	3.400	13.620	3.100
	2012	65.30	15.080	15.000	4.210	3.090	2.800
	2013	64.90	15.209	14.450	8.913	2.920	2.000
	2014	63.44	15.324	16.230	13.759	2.770	2.000
	2015	62.22	15.361	16.230	13.864	2.620	1.900
	2016	60.54	15.369	14.450	13.918	2.580	4.700
	2017	59.87	15.392	19.440	16.019	2.500	4.700
	2018	59.00	15.409	19.800	9.554	2.410	4.700
	2019	58.43	15.429	22.540	9.930	2.310	4.700
	2020	58.00	15.435	30.340	10.230	2.200	4.700